

CLAIMS

I/We claim:

1. A method of producing a high pressure gas, comprising:
 - providing a container;
 - supplying the container with a liquid;
 - increasing the pressure of the liquid within the container;
 - supplying a reactant composition to the liquid under pressure in the container and which chemically reacts with the liquid to produce a resulting high pressure gas; and
 - drawing the resulting high pressure gas from the container.
2. A method as claimed in claim 1, and wherein the step of supplying the reactant compound further comprises supplying a chemical hydride which chemically reacts with the liquid to produce a resulting high pressure hydrogen gas.
3. A method as claimed in claim 1, and wherein before the step of supplying the reactant composition to the liquid under pressure, the method further comprises:
 - enclosing a reactant composition in a frangible enclosure; and
 - releasing the reactant composition from the frangible enclosure before the reactant compound is supplied to the container.
4. A method as claimed in claim 3, and wherein after the step of enclosing the reactant composition, and before the step of releasing the reactant composition, the method further comprises:

providing a fluid stream which is disposed in fluid flowing communication with the container and which receives and moves the frangible enclosure along a course of travel; and

providing an assembly along the course of travel which fractures the enclosure to release the reactant composition therefrom.

5. A method as claimed in claim 1, and wherein before the step of supplying the reactant composition, the method further comprises:

providing a substantially continuous conveyor coupled in selective fluid flowing relation relative to the container, and wherein the continuous conveyor moves the reactant compound along a course of travel and into the container.

6. A method as claimed in claim 5, and wherein the continuous conveyor comprises an auger.

7. A method as claimed in claim 5, and wherein before the step of providing the continuous conveyor, the method further comprises:

mixing the reactant compound with an inert fluid and delivering the mixture of the reactant compound and the inert fluid to the continuous conveyor.

8. A method as claimed in claim 1, and wherein the liquid pressure is greater than about 100 pounds per square inch.

9. A method as claimed in claim 1, and wherein the chemical reaction of the reactant composition with the liquid in the container reactively consumes the liquid, and wherein the method further comprises:

releasing the liquid pressure of the container; and

replacing the liquid which has chemically reacted with the reactant compound.

10. A method of producing a high pressure gas, comprising:

providing a container which is operable to enclose a first liquid under pressure;

supplying a source of a first liquid which is received and enclosed by the container;

increasing the pressure of first liquid enclosed within the container;

rendering a reactant composition substantially chemically non-reactive;

combining the substantially non-reactive reactant composition with a second fluid stream and;

coupling the second fluid stream in fluid flowing relation relative to the container;

supplying the reactant compound to the container in a manner which causes the previously non-reactive composition to chemically react with the first liquid in the container to produce high pressure hydrogen gas; and

drawing the high pressure hydrogen from the container.

11. A method as claimed in claim 10, and wherein the step of increasing the pressure of the first liquid enclosed within the container further comprises:

providing a charging pump coupled in fluid flowing relation relative to the container and which is operable to increase the pressure of the first liquid.

12. A method as claimed in claim 11, and wherein the charging pump increases the first liquid pressure to greater than about 100 pounds per square inch.

13. A method as claimed in claim 10, and wherein the step of rendering a reactant composition substantially chemically non-reactive further comprises:

enclosing the reactant composition in a frangible substantially chemically non-reactive enclosure.

14. A method as claimed in claim 10, and wherein the step of rendering a reactant composition substantially non-reactive further comprises:

mixing the reactant composition with a substantially inert fluid.

15. A method as claimed in claim 10, and wherein the step of coupling the second fluid stream in fluid flowing relation to the container further comprises:

providing a valve which is operable to selectively remove a portion of the second fluid stream, substantially isolate the portion of the second fluid stream from the remaining fluid stream, and deliver the isolated portion of the second fluid stream to the container.

16. A method as claimed in claim 13, and wherein the step of supplying the reactant composition to the container further comprises:

providing an assembly which fractures the enclosure to release the reactant composition therefrom.

17. A method as claimed in claim 10, and wherein the reactant composition is a metal or metal hydride which reacts with the first fluid to produce hydrogen gas and other byproducts, and wherein the first fluid is consumed in the chemical reaction, and wherein the method further comprises:

replacing the first fluid consumed in the chemical reaction.

18. A method of producing a high pressure gas, comprising:
providing a container having a volume;
supplying a source of water to the container and substantially filling the volume thereof;

increasing the pressure of the water in the container;
coupling a fluid stream in fluid flowing relation relative to the container;
supplying a source of a metal or metal hydride to the fluid stream;
metering the fluid stream carrying the source of metal or metal hydride to the container;
reacting the metal or metal hydride with the water which is under pressure to generate high pressure hydrogen gas and other byproducts;

drawing the high pressure hydrogen gas from the container and supplying it as a fuel;

depleting the water in the container by chemically reacting the water with the metal or metal hydride;

releasing the pressure from the container; and

removing the byproducts produced by the chemical reaction of the metal or metal hydride with the water, and replenishing the supply of water.

19. A method as claimed in claim 18, and wherein the step of supplying the source of metal or metal hydride further comprises:

enclosing the source of the metal or metal hydride into a plurality of frangible enclosures, and wherein the fluid stream carries the individual frangible enclosures.

20. A method as claimed in claim 19, and further comprising:
an assembly for fracturing the individual frangible enclosures to reactively expose the metal or metal hydride to the water which is under pressure.

21. A method as claimed in claim 18, and wherein the step of supplying the source of the metal or metal hydride further comprises:

mixing the source of the metal or metal hydride with a substantially inert carrier fluid, and wherein the mixture of the metal or metal hydride and the carrier fluid are supplied to the container.

22. A method as claimed in claim 18, and wherein the step of metering the fluid stream further comprises:

removing a portion of the fluid stream;

isolating the portion of the fluid stream from the remaining fluid stream; and

delivering the isolated portion of the fluid stream to the container.